AMENDMENT

In the Claims:

The following listing reflects amendments to the claims and replaces all prior versions and listings of claims in this application.

1. (Currently amended) A method for assaying for an amplification product from a first target polynucleotide, comprising:

providing a sample that is suspected of containing the amplification product, wherein the amplification product is a polynucleotide comprising a first label and a capture sequence not present in the target polynucleotide at the same position, wherein the amplification product is formed by primer extension from a template and is produced by a process comprising incorporating the polynucleotide comprising the first label into the amplification product using a polymerase, wherein said template comprises a complement to the target polynucleotide and a target noncomplementary region, wherein said capture sequence is a complement to said target noncomplementary region;

providing a substrate that is conjugated to a first capture probe;

contacting the sample with the capture probe under a first set of hybridization conditions;

wherein the capture probe is a polynucleotide that can bind to the capture sequence under said first set of hybridization conditions; and

determining if the first label is associated with the substrate.

2. (Cancelled)

3. (Currently amended) The method of claim ~~2~~ 1, wherein the substrate is selected from the group consisting of a microsphere, a chip, a slide, a multiwell plate, a membrane, an optical fiber, and a porous gel matrix.

4. (Original) The method of claim 3, wherein the substrate is a slide.

5. (Currently amended) The method of claim ~~2~~ 1, wherein the substrate is conjugated to a plurality of different capture probe polynucleotides having corresponding different sequences, wherein each of said different capture probes can selectively bind to a corresponding different capture sequence on a corresponding different amplification product.

6. (Original) The method of claim 3, wherein the substrate is a first microsphere comprising a first spectral code comprising a first semiconductor nanocrystal and first fluorescence characteristics.

7. (Original) The method of claim 6, wherein the first semiconductor nanocrystal comprises a core selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, Pb, PbS, PbSe, an alloy thereof, and a mixture thereof.

8. (Original) The method of claim 7, wherein the core is CdSe.

9. (Original) The method of claim 6, wherein the first semiconductor nanocrystal comprises a shell.

10. (Original) The method of claim 9, wherein the shell is ZnS.

11. (Cancelled)

12. (Cancelled)

13. (Currently amended) The method of claim ~~2~~ 1, wherein the first label comprises an

agent selected from a chromophore, a lumiphore, a fluorophore, a chromogen, a hapten, an antigen, a radioactive isotope, a magnetic particle, a metal nanoparticle, an enzyme, an antibody or binding portion or equivalent thereof, an aptamer, and one member of a binding pair.

14. (Original) The method of claim 13, wherein the agent is a fluorophore.

15. (Original) The method of claim 14, wherein the fluorophore is selected from a semiconductor nanocrystal, a fluorescent dye, a lanthanide chelate, and a green fluorescent protein.

16. (Original) The method of claim 15, wherein the fluorophore is a semiconductor nanocrystal.

17. (Original) The method of claim 16, wherein the semiconductor nanocrystal comprises a core selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, Pb, PbS, PbSe, an alloy thereof, and a mixture thereof.

18. (Original) The method of claim 17, wherein the core is CdSe.

19. (Original) The method of claim 16, wherein the semiconductor nanocrystal comprises a shell.

20. (Original) The method of claim 19, wherein the shell is ZnS.

21. (Original) The method of claim 15, wherein the fluorophore is a fluorescent dye.

22. (Original) The method of claim 21, wherein the fluorescent dye is fluorescein.

23. (Original) The method of claim 15, wherein the fluorophore is a lanthanide chelate selected from a europium chelate, a terbium chelate and a samarium chelate.

24. (Original) The method of claim 13, wherein the agent is an enzyme selected from alkaline phosphatase, horseradish peroxidase, β-galactosidase, glucose oxidase, a bacterial luciferase, an insect luciferase and sea pansy luciferase.

25. (Original) The method of claim 13, wherein the agent is selected from avidin, streptavidin, digoxigenin, and biotin.

26. (Currently amended) The method of claim ~~2~~ 1, wherein the first label is a fluorophore, and determining if the first label is associated with the substrate comprises:

applying a light source to the substrate that can excite the fluorophore; and

determining if a fluorescence emission from the fluorophore occurs from the substrate.

27. (Original) The method of claim 1, wherein the sample is assayed for the presence of the amplification product.

28. (Original) The method of claim 1, wherein the sample is assayed to determine the amount of the amplification product.

29. (Original) The method of claim 28, wherein the amplification product is produced at a detectably higher level from at least one allele of a locus having at least two alleles.

30. (Previously presented) The method of claim 6, wherein the sample is suspected of containing a second amplification product from a second target polynucleotide and is further contacted under a second set of hybridization conditions with a second capture probe conjugated to a microsphere,

wherein the second capture probe is a polynucleotide,

wherein the microsphere can be the first microsphere or a different second microsphere,

wherein when the microsphere is a different second microsphere it comprises a second spectral code comprising second fluorescence characteristics, said second spectral code distinguishable from the first spectral code,

wherein the second set of hybridization conditions can be the same as or different than the first set of hybridization conditions,

wherein the second capture probe can hybridize to the second amplification product under the second set of hybridization conditions,

wherein the second amplification product comprises a second label, which can be the first label when the microsphere is a different second microsphere or can be a different second label, and

determining if the second label is associated with the microsphere.

31. (Previously presented) The method of claim 30, wherein the sample is suspected of containing a third amplification product from a third target polynucleotide and is further contacted under a third set of hybridization conditions with a third capture probe conjugated to a microsphere,

wherein the third capture probe is a polynucleotide,

wherein the microsphere can be the first microsphere, the second microsphere or a different third microsphere,

wherein when the microsphere is a different third microsphere it comprises a third spectral code comprising third fluorescence characteristics, said third spectral code distinguishable from the first spectral code and the second spectral code,

wherein the third set of hybridization conditions can be the first set of hybridization conditions, the second set of hybridization conditions, or a different third set of hybridization conditions,

wherein the third capture probe can hybridize to the third amplification product under the third set of hybridization conditions,

wherein the third amplification product comprises a third label, which can be the first label or the second label when the microsphere is a different third microsphere or can be a

different third label, and

determining if the third label is associated with the microsphere.

32. (Previously presented) The method of claim 31, wherein the sample is suspected of containing a fourth amplification product from a fourth target polynucleotide and is further contacted under a fourth set of hybridization conditions with a fourth capture probe conjugated to a microsphere,

wherein the fourth capture probe is a polynucleotide,

wherein the microsphere can be the first microsphere, the second microsphere, the third microsphere or a different fourth microsphere,

wherein when the microsphere is a different fourth microsphere it comprises a fourth spectral code comprising fourth fluorescence characteristics, said fourth spectral code distinguishable from the first spectral code, the second spectral code and the third spectral code,

wherein the fourth set of hybridization conditions can be the first set of hybridization conditions, the second set of hybridization conditions, the third set of hybridization conditions or a different fourth set of hybridization conditions,

wherein the fourth capture probe can hybridize to the fourth amplification product under the fourth set of hybridization conditions,

wherein the fourth amplification product comprises a fourth label, which can be the first label, the second label or the third label when the microsphere is a different fourth microsphere or can be a different fourth label, and

determining if the fourth label is associated with the microsphere.

33. (Original) The method of claim 30, wherein the first and second amplification products are produced from a single locus.

34. (Original) The method of claim 33, wherein the first and second amplification products differ by a single nucleotide.

35. (Original) The method of claim 30, wherein the second microsphere is the first microsphere and both first and second capture probes are conjugated to the first microsphere, and wherein the first and second labels are fluorophores comprising distinguishable fluorescence characteristics.

36. (Original) The method of claim 30, wherein the second microsphere is a different second microsphere, and wherein the first and second labels each comprise the same fluorophore.

37. (Original) The method of claim 30, wherein the second microsphere is a different second microsphere, and wherein the first and second labels respectively comprise first and second fluorophores having distinguishable fluorescence characteristics.

38. (Original) The method of claim 1, wherein the substrate is further conjugated to a second capture probe, wherein the second capture probe can preferentially bind to a second capture sequence on a second amplification product, said second amplification product comprising a second label that can be the same as or different than the first label, wherein the binding of the first amplification product to the first capture probe and of the second amplification product to the second capture probe can be independently determined.

39. (Previously presented) The method of claim 38, wherein the substrate is further conjugated to a third capture probe, wherein the third capture probe can preferentially bind to a third capture sequence on a third amplification product, said third amplification product comprising a third label that can be the same as or different than the first label and/or the second label, wherein the binding of the third amplification product to the third capture probe can be independently determined.

40. (Previously presented) The method of claim 39, wherein the substrate is further conjugated to a fourth capture probe, wherein the fourth capture probe can preferentially bind to a fourth capture sequence on a fourth amplification product, said fourth amplification product

comprising a fourth label that can be the same as or different than the first label and/or the second label and/or the third label, wherein the binding the fourth amplification product to the fourth capture probe can be independently determined.

41. (Original) The method of claim 38, wherein the first and second capture probes are conjugated to first and second positions on the substrate, and wherein the binding of the first amplification product to the first capture probe and of the second amplification product to the second capture probe can be independently determined by determining if the first label is associated with the first position and if the second label is associated with the second position.

42. (Original) The method of claim 38, wherein the second label is different from the first label, and wherein the binding of the first amplification product to the first capture probe and of the second amplification product to the second capture probe can be independently determined by determining if the first label is associated with the substrate and if the second label is associated with the substrate.

43-85. (Cancelled)